What Can I do???

These problems didn't happen overnight, so it's going to take time to clean them up. People in your state and county are doing lots of things to keep waters healthy, but they can't do it all. Do you think someone is watching how much fertilizer your mom puts on her garden or whether you pick up after your pup? Everyone's actions every day can make the difference. Here are 12 ideas to get you started, but don't stop there!

1. Survey your home. Before we can come up with solutions, we have to know the problems. Use the survey at the end of this booklet to see how you and your family rate and how you can help be part of the solution instead of part of the problem.

2. Conserve water—inside and out. By conserving the amount of water we use, we reduce the amount that needs to be treated.

- Check to see if your toilets are leaking. Squirt a couple drops of food dye into the top of the tank and wait a few minutes to see if the dye shows up in the toilet bowl. If it does, you've got a leak.
- Help your family install low-flow devices for your showers and toilets that reduce the amount of water used.
- Water the lawn early in the morning or in the evening to reduce evaporation and increase the amount the plants drink. Make sure the sprinkler isn't also watering the driveway or sidewalk.

3. Love your lawn—naturally. Ask your parents to convert some of the grassed areas in your yard into natural areas. This eliminates the need for fertilizers, provides habitat for birds and animals, and frees up your time from mowing the lawn. Where you do have to mow, leave the grass clippings on the lawn to provide natural fertilizer to the grass, and let the grass grow to at least 3 inches before you cut it.

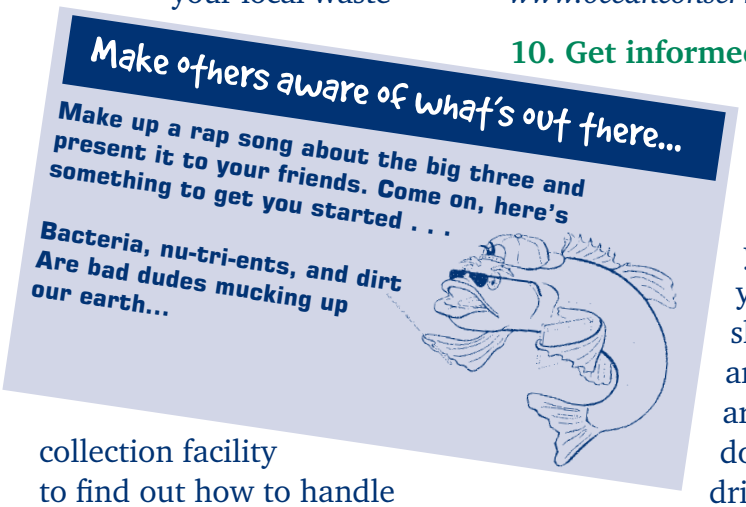
4. Build a compost pile. Composting yard and food wastes is a great way to make your own organic fertilizer and reduce waste that goes into landfills. Be sure to keep meat and dairy products out of your compost pile—they can attract rodents. Call 1-888-LANDCARE for more information on backyard conservation or go to *www.nrcs.usda.gov* and click on "Backyard Conservation."

5. Take a day off each week from using cars. Many of the metals and pollutants that wash into streams come from our cars—copper from brake pads, cadmium from tires, oil from the crankcase. Get your whole family involved. Ride bikes, walk, or take public transportation at least one day a week. Convince your parents to treat to you to a movie with all the money they save in gas.

6. Stop storm drain pollution. Those hollow drains along your curb are meant to carry storm water off the street during heavy rains. Chances are that whatever goes into a storm drain winds up in your local stream. Storm drain stenciling is a good way to let others know not to dump anything down there such as oil, leaves, pet waste, grass clippings, or cigarette butts. Produce and distribute a door hanger or flyer for local households to make them aware of your stenciling

project and remind them that storm drains dump directly to the local waterbody. Visit *www.earthwater-stencils.com* for more information on how to do a storm drain stenciling project.

7. Dispose of hazardous waste properly. We're not talking about drums of nuclear waste. We're talking car batteries, solvents, pesticides and cans of oil-based paint. Contact your local waste collection facility to find out how to handle these materials. Many facilities have free collection days when you can bring in these materials for disposal.



8. Adopt a stream. Find out if there is a volunteer monitoring organization or watershed group in your community—and join it. If not, start one as part of your science class or other local organization. Check out EPA's web site (*www.epa.gov/adopt*) for a list of watershed groups in your community. Read EPA's brochure *Getting Started in Volunteer Monitoring* at *www.epa.gov/owow/monitoring*.

9. Participate in the International Coastal Cleanup. The annual event is sponsored by the Ocean Conservancy every September. For more information call 1-800-CMC-BEACH or visit *www.oceanconservancy.org*.

10. Get informed. Knowledge is one of the most powerful tools around. Find out all you can about your watershed. What are the boundaries? Where does your drinking water come from? How is it treated? Get a copy of your state's water quality report (visit *www.epa.gov/305b*) to find out the major water quality issues in your area. A good starting place is EPA's Watershed Information Network at *www.epa.gov/win*.

11. Enter the River of Words Poetry and Art Contest. Co-sponsored by the Library of Congress and United States Poet Laureate (1995-1997) Robert Haas, the River of Words Poetry and Art Contest seeks to foster responsibility, imagination and action in young people and to publicly acknowledge their creativity and concerns. Visit *www.riverofwords.org,* send an email to info@riverofwords.org, or call (510) 548-POEM.

12. Spread the word. Once you've learned about your watershed and its major water quality issues, tell others. Make a presentation in your school. Write an article for your school or community newspaper. Organize an environmental fair at your school. Contact the Water Environment Federation at *public_education@wef.org* for a guide on hosting a watershed festival. The Groundwater Foundation (1-800-858-4844) also has several guides on hosting water festivals, including *Making More Waves: Ideas from Across the U.S. and Canada for Organizing Your Watershed Festival.*

There's a method to this madness:

How to use the scientific method

The following pages contain ideas for projects that you can do for school or for fun. Before starting any of them, check with your parent or teacher first. These projects are designed to increase your awareness and concern for the environment. Make sure you share what you learn with your family and friends.

Scientists use the scientific method to solve problems. For each of the projects listed in this report follow the same steps:

1. **Describe a problem and formulate a question to answer.**
2. **State your hypothesis. A hypothesis is a statement that predicts what you think will happen.**
3. **Conduct the experiment. Make observations about what is happening.**
4. **Analyze the information.**
5. **State your conclusion. Was your hypothesis incorrect? What have you learned, based on the information you collected?**

Science Project – The Wonders of Wetlands
Build a Working Wetland Model

Materials:
- ☐ 2 large aluminum roasting pans
- ☐ Sand
- ☐ Modeling clay
- ☐ Carpet
- ☐ Ground pepper
- ☐ Twigs, branches

Background: Wetlands are amazing natural areas that are in between deep open water and dry land. Sometimes it is easy to see the water in a wetland. At other times the wetness lies just below the surface of the soil, where the plant roots grow. Maybe you think of wetlands as swamps, bogs, or marshes—muddy places that smell like rotten eggs, are full of mosquitos and leave your sneakers caked in muck. Maybe you think of them as cool places full of turtles, frogs, and birds.

Wetlands provide more benefits than most people realize. First, wetlands provide nurseries and homes for birds, fish, reptiles, insects, amphibians, and mammals. Wetlands also can filter out pollutants before they reach the stream. Wetlands can slow down the flow of waters to reduce the chances of flooding and protect areas from erosion. Finally, wetlands provide opportunities for recreational activities such as canoeing and birdwatching. When you finish this experiment, you will be better able to understand how wetlands are beneficial to our environment.

Hypothesis: State a hypothesis about the ability of a wetland to filter pollutants and soak up excess water. Give reasons for your hypothesis.

Experiment: In the first roasting pan make a model of a wetland. Build the wetland using materials such as sand, clay, carpeting, and twigs (hey, be creative). Leave the other pan empty. Raise both pans at one end approximately 2 inches. Measure equal amounts of water. Pour the water over the wetland pan and into the empty pan. Observe and record what you see. How long did it take the water to settle in the end of the pans? How much water was in the lower end of both pans?

Repeat the experiment several times. Each time, add more and different materials to the empty pan. Observe and record how long it takes the water to travel to the ends of the pans. Which materials soaked up the most water?

Repeat the experiment with your wetland pan adding pepper to the water. Observe and record how much pepper ends up at the end of the pan. What happened to the remaining pepper?

Conclusion: What conclusions can you draw from this project? In what ways are wetlands beneficial to an ecosystem?

Science Project - From the Rain to the Drain

Measure changes in pH as water goes from your house to a stream

Materials:

- ☐ 4 clean containers to collect water samples (cut the tops off empty plastic ½-gallon milk containers)
- ☐ pH testing kit (ask your science teacher where you can get a kit)
- ☐ Graph paper
- ☐ Measuring tape

Background: As rainwater falls and moves across your yard, down the driveway, and into a storm drain, it picks up pollutants. These pollutants come from many sources such as the exhaust from our cars, fertilizers on our lawns, dirt from bare patches, and wastes from our pets. These pollutants can affect the pH of the water, making it more acidic. pH is the measure of how acidic or basic a solution is. Changes in pH can affect how chemicals dissolve in the water and whether organisms can use these chemicals to grow. Most aquatic organisms prefer a pH range of 6.5–8.0

Hypothesis: State a hypothesis about how the pH readings of your water samples will change as the water flows from your yard down to a storm drain. Record your hypothesis.

Experiment: Identify four sampling locations starting at the highest point (hopefully near your house) and ending in a storm drain. Measure the distance between your sampling locations, and space the locations at least 30 feet apart (or measure 30 paces with your feet). Leave the first container outside your door to collect rainwater. Laying each container on its side, collect the runoff from the other three locations. Test the pH of each container and record your findings. Repeat the sampling two more times on different days. Each time record the number of days since the last rain event before you sampled.

Plot your measurements on a graph with the pH concentration on one axis and the sampling location (distance from your house) on another axis.

Conclusion: Does the pH in the water samples increase, decrease, or stay the same? What conclusions can you make about the changes in the pH from your house to the storm drain? How do you think these changes affect the pH level of the river water? Did the pH level change from one rain event to another? What do think are the major sources of pollutants in the rainwater?

Science Project - Watershed Awareness Campaign

Background: Clean, healthy watersheds depend on an "informed public" to make choices that help the environment. Hundreds of thousands of dollars are poured into education campaigns each year to make communities aware of the sources of water pollution in their watershed and what can be done to prevent these problems. Marketing firms conduct research on their markets before they develop an ad campaign. They identify their markets, find out what messages appeal to them, and then develop ways to get the messages out.

Conduct your own research to gauge the awareness of your community on watershed issues, and design a marketing campaign to improve awareness of the issues.

Hypothesis: State a hypothesis about the current understanding of watershed issues in your community. Predict which audiences are the most informed and which messages you think will appeal to which audiences.

Materials: Interview forms
List of questions

Experiment: Identify at least three different audiences from which to gather information on watershed issues (for example, students in grades 6-9, homeowners, local elected officials). Develop a 1- or 2-page interview form to ask questions that will help you determine their level of knowledge on various issues. (For example, do they know what a watershed is? Where does their drinking water come from?) [Hint: Use some of the questions on the Test Your Water Smarts in this report to get you started.] Determine how you will get the information. (During lunch period? Stopping people at the grocery store? After a board of supervisors meeting?) After you collect and analyze the information, develop a campaign to address the major gaps of knowledge in your community and outline strategies to fill in these gaps (a watershed fair, articles in the local newspaper, etc.). Show examples of materials you would use to get the message out.

Conclusions: What audiences were the most informed about watershed issues? Which messages appealed to the different audiences? How did the different audiences get their information on watershed issues?